

FALL PROTECTION BASICS (ABCDs)











OUTLINE

- Hierarchy of Controls
- Duty to Have Fall Protection
- Fall Protection Basics
- Anchorage
- Body Wear
- Connectors
- Descent & Rescue
- Education





HIERARCHY OF CONTROLS

Let's Remove Fall Protection!



HIERARCHY OF CONTROLS







1. Elimination (removing the fall hazard)

2. Passive Fall Protection *(separation of hazard and worker)*

3. Fall Restraint (prevents worker from reaching hazard)

4. Fall Arrest (safely stops a worker who has fallen)

5. Administrative (practices & procedures warning of hazard area)



DUTY TO HAVE FALL PROTECTION

- OSHA Mandates
- Jobsite Roles
- Inspections
- Catastrophic Use



OSHA MANDATES



- Workers are to be <u>protected from falling</u> at heights by use of:
 - Guardrail systems
 - Safety netting
 - Fall arrest systems
- Fall protection <u>must be provided</u> at the following minimum heights:
 - 4-ft in general industry
 - 5-ft in shipyards
 - 6-ft in construction
 - 8-ft in longshoring
 - 10-ft for scaffolding
 - 15-ft for steel-erection decking
 - 30-ft for steel-erection bolting
- Fall protection is <u>required at all times</u> when working over dangerous equipment.



JOBSITE ROLES

- Qualified Person: One who, by specialized training, experience, and extensive knowledge, has successfully demonstrated his/her ability to utilize safety equipment properly without endangering themselves or others.
- **Competent Person:** One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take corrective measures to eliminate them.
- Authorized Person: A person approved or assigned by the employer to perform a specific type of duty or duties or to be at a specific location or locations at the jobsite. Also called a Designated Person.

advance PLANNING is shown to INCREASE FALL PROTECTION use by 710/0



INSPECTIONS



- **Inspection Training:** Each user must be properly trained on use and inspection. • *Pro Tip: Using a checklist helps ensure a more comprehensive inspection.*
- **Daily Inspection:** <u>Required by user</u> for all pieces of equipment before each use. •
- **Annual Inspection:** Must be documented each year by a Competent Person other than user.
- Failed Inspection: Any item that fails either a daily or annual inspection must be immediately removed • from service. When in doubt, the item should not be used.



Anchor Inspection Checklist





Harness Inspection Checklist



Horizontal Lifeline Inspection Checklist



Lanyard Inspection Checklist



Self Retracting Lifeline Inspection Checklist



Vertical Lifeline Inspection Checklist

CATASTROPHIC USE

- **Removal from Service**: After a fall event, all pieces of fall protection equipment in that system must be removed from service, marked accordingly and eventually destroyed.
- **Certified Repair**: Certain equipment, such as some retractable lifelines, may be reused if the unit is repaired and recertified for return to service by Safewaze or an authorized repair center.
- **Examples**: Images below show just a few possible indicators a piece of PPE has been in a fall.



Fall indicator displays when harness has been exposed to a load that requires harness to be taken out of service.



Webbing on right extended from shock pack with white edges showing after SRL has been in a fall and must be removed from service.



Load indicating snap hook displays red warning band when hook has been exposed to a load that requires this equipment to be taken out of service.





FALL PROTECTION BASICS

- ABCDs and "E"
- System Definition
- System Requirements



ABCDs – AND "E"



Anchorage, the secure point of attachment for a fall arrest system, must support the necessary load in a fall event with a suitable safety factor.

Body wear, most often a harness, safely distributes fall arrest forces over the worker's body and provides an attachment point for a worker's personal fall arrest system.

Connector, such as a lanyard or self-retracting lifeline, securely fastens the worker's body wear to the anchorage and decelerates the fall to allowable forces.

Descent and rescue are an often overlooked yet critical component that requires advance planning and practice to ensure a fallen worker can be lowered or lifted to safety in a prompt manner, generally recognized as within 4-6 minutes.

BONUS – Education: Train early and often. Every worker should understand the job and the specific product usage for the required safety equipment. Workers and leaders alike must be empowered to recognize and question unsafe conditions.





Personal Fall Protection System: Combined components used to provide protection from falling or to safely arrest an employee's fall if one occurs. Examples of personal fall protection systems include both fall arrest and restraint systems. The system includes anchorage, bodywear and a connecting device such as an SRL or lanyard.



SYSTEM REQUIREMENTS

- All components must be rated at 5,000 lbs.
- Cannot be designed to allow free fall of more than 6-ft.
- Cannot be designed to allow more than 1,800 lbs. of force on worker.
- Always attempt to tie off directly above your head.
- Always use the shortest lanyard possible: the shorter the tie-off, the shorter the fall.
- Calculate fall arrest distance to ensure sufficient clearance.
- Consider deadly swing fall (pendulum) in clearance calculations.











ANCHORAGE

- Examples
- Requirements







ANCHOR REQUIREMENTS

- Minimum design load of individual anchorage must meet 5,000 lbs.
- Anchors in a personal fall arrest system must maintain a safety factor of two, operating under the supervision of a Qualified Person.
- Anchors used for attachment of personal fall arrest equipment shall be independent from those used to support or suspend platforms.
- All hooks attached to anchor must be able to fully and securely close.







BODY WEAR (HARNESS)

- Examples
- Requirements
- Proper Fit







- A worker in a body harness shall not be exposed to a maximum arresting force in excess of 1,800 lbs.
- Dorsal (back) D-ring is the <u>only</u> fall arrest connection point do not attach connector to side D-rings or lanyard keepers.





• With tongue buckle adjustors, use of a center grommet is ideal for best fit.







PROPER FIT



- **Too loose:** Can present a choking hazard and may not provide proper protection in the event of a fall.
- **Too tight:** Uncomfortable and can cause injury such as muscle strains or pinched nerves.
- **Sizing** and fit: Harness must be both properly sized for your body and properly adjusted on you.
- Do not alter your harness in any way!
- **Safe fit:** Follow the steps at right with a correctly sized harness to ensure a safe, comfortable fit.



STEP 1

- Pull leg straps between legs and connect to opposite ends. For a belted harness, connect waist strap after leg straps.
- Use two buckles at base of shoulder straps to adjust shoulder straps. Position extra seat strap below seat of pants.

STEP 2



 Chest strap should **NOT** be close to user's neck, as strap may contact neck if back
D-ring slides up during fall arrest.

STEP 3

- After all straps are buckled, tighten all buckles so that harness fits snug and allows full range of movement.
- Pass excess strap through strap keepers.



CONNECTORS

- Examples
- Self-Retracting Lifelines (SRLs)
- Shock Absorbing Lanyards
- Positioning Lanyards & Assemblies



CONNECTOR EXAMPLES





CONNECTOR EXAMPLES



Positioning Lanyards







Positioning Assemblies







SELF RETRACTING LIFELINES (SRLs)

- Minimum line constituent strength of 3,600 lbs. required for cable or web.
- Freefall must be limited to a maximum of 2-ft.
- Auto-locking or double-locking hardware required.
- Limit use to less than (<) 30° angle under your anchor point.
- Essential to match the type and function of the SRL to the exact specs of the job.
- Overhead attachment preferred where possible.
- Never allow line to "snap" back into housing.



SHOCK ABSORBING LANYARDS

- Less than 900 lbs. of force allowed on a 6-ft free fall.
- Deceleration distance of 48" or less required.
- Double-locking or auto-locking hooks required.
- When a lanyard has an external shock pack, that end always attaches to the back D-ring.
- A shock absorber can stretch up to 4-ft which must be included when calculating total fall clearance.
- Do not choke/hook lanyard back to itself unless specifically designed for that purpose.
- Never attach multiple lanyards together use the shortest length lanyard possible for the specific job.
- Never tie knots in lanyards this reduces the strength by more than 50%.



POSITIONING LANYARDS & ASSEMBLIES

- OSHA mandates that work positioning lanyards must <u>not</u> be used for fall arrest
- Positioning lanyards are simply to hold a worker in place and do not have any means of shock absorption
- Restraint lanyards keep a worker from reaching the fall hazard
- Auto-locking or double-locking hardware required
- Positioning lanyards may be constructed of webbing, rope or wire rope





DESCENT & RESCUE

- Examples
- Requirements



DESCENT & RESCUE EXAMPLES





- **Rescue plans save lives**. OSHA requires that a Rescue Plan be included in a project's Fall Protection Plan.
- OSHA requires a worker to be rescued within 4-6 minutes of a fall.
- **Suspension trauma** (orthostatic intolerance) begins as soon as a worker experiences a fall and is suspended above the ground.
 - While suspended, a worker may become unconscious.
 - Fatalities can occur in less than 30 minutes and even as little as 10 minutes.
 - Once rescued, a fallen worker should avoid immediately standing until circulation has resumed.

TRAINING IN SELF-RESCUE REDUCES the odds of a FALL becominga FATALITY by 769/6





BONUS: EDUCATION



EDUCATION & TRAINING

- Continued education and ongoing training is a critical investment to protect the lives and livelihoods of workers at height.
- Nearly 50% of those involved in a fall reported that no fall protection was being used at the time of the fall.
- Workers who are not properly trained on fall protection equipment are much less likely to use it.
- Early training is key 20% of fatal falls occur in a worker's first two months on the job.
- Training is the most common change an employer makes <u>after</u> a fall.



OSHA estimates a 4-6X ROI for every \$1 SPENT on safety











THANK YOU!

Let us know how we can help. Phone: 800-230-0319 Email: info@safewaze.com Online: safewaze.com

